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10/603,500	06/24/2003	Prasad Miriyala	CISCP109C1/315361	3636

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BEYER WEAVER LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

EXAMINER	
SOL, ANTHONY M	

ART UNIT	PAPER NUMBER
2619	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/603,500	MIRIYALA, PRASAD	
	Examiner	Art Unit	
	ANTHONY SOL	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

- A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/17/2008 has been entered.
- Claims 1, 15, 20, 23, 24, 33, and 42 have been amended.
- Claims 44-46 have been added.
- Claims 1-2 and 4-46 are pending.

Claim Objections

1. Claims 44-46 are objected to because of the following informalities:

For claims 44 and 45, line 1, it is suggested that the phrase, "The network system as recited in claim 1…" be replaced with "The network system of claim 1…" to be consistent with the language used in the other dependent claims.

For claim 46, line 1, it is believed that the phrase, "The network system claim 1 wherein…" should state "The network system of claim 1, wherein…". In other words, the word "of" and the punctuation mark "," (comma) are missing.

Appropriate corrections are required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4, 6-16, 18-24, 26-38, 40-42, and 46 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,665,304 B2 ("Beck").

Regarding claims 1, 20, 24, 33, and 42,

Beck shows in fig. 7 a standby group of ATM network devices (*processor nodes 10a, 10b, 10*c) within an ATM network (col. 10, lines 64-67, *high-speed communications interface, e.g. ATM*), each ATM network device within the standby group having its own ATM address (*S1.A, S1.B, S1.C*) and sharing a non-ATM network address with other members of the standby group (col. 11, lines 17-22, 40-45, *cluster alias address*).

Beck further shows in fig. 7 a server (*network router 25*) which is configured to determine that a first member (*processor node A 10a*) of the standby group of network devices is not available to provide the network service and identify a second member (*processor node B 10b*) of the standby group of network devices to provide the network service, wherein the determination by the server is performed based on at least one of i)

detecting that the first member has not opened a virtual circuit within a predetermined period, and detecting that the first member has not sent a KEEP ALIVE message within a predetermined period (col. 12, lines 14 to col. 13, line 63, see in particular col. 13, lines 9-11, *For illustration purposes, consider that processor node 10a is the preferred path to subnet S1. When processor node 10a crashes, the network router will stop getting responses to its queries. After a predetermined period of time has expired, the routing daemon 21 will timeout while waiting for a response from processor node 10a*), and wherein the server is an ATM server in the ATM network, (col. 10, lines 64-67, *high-speed communications interface, e.g. ATM;* col. 12, lines 51-60, *Network 22* ***includes*** *network router devices,* e.g., **network router 25***)* and wherein the server is not one of the ATM network devices in the standby group of ATM network devices (see fig. 7, note that network router 25 is not one of the ATM network devices in cluster 24).

4. Regarding claim 2,

Beck discloses that of the three processor nodes 10a-10c, the network router 25 typically selects one to use as a preferred path to subnet S1 (col. 13, lines 3-5).

5. Regarding claims 4 and 27,

Beck shows in fig. 2 processor nodes 10a-10c in a “subnet S1” 22 having a virtual connection to network router 25 (col. 4, lines 21-28, col. 11, lines 30-45, col. 12, lines 50-65).

6. Regarding claims 6 and 7,

Beck shows in fig. 7 a virtual subnet S3, wherein each processor node associated with a virtual subnet "advertise" the location of that virtual subnet to router 25. Beck discloses that each processor node 10 in the cluster 24 uses IP routing to advertise itself as a network route to the associated virtual subnet (col. 11, lines 30-39).

7. Regarding claim 8,

Beck discloses when processor node 10a crashes, the network router will stop getting responses to its queries (col. 13, lines 9-11).

8. Regarding claims 9 and 46,

Beck discloses that each network router maintains a map database that indicates available network paths over which data packets can be sent to reach particular processor nodes (col. 12, lines 54-57).

9. Regarding claims 10, 11, 12, 13, 16 and 22,

Beck discloses that processor nodes 10b and 10c arbitrate among themselves to determine which one will acquire the network layer address of processor node 10a (col. 13, lines 43-45).

10. Regarding claim 14,

Beck discloses the use of ARP protocol and how daemon processes 21 queries the processor nodes and network routers to which it is connected to find out which processor nodes and network routers they are connected to. Beck further discloses that if processor node 10a crashes, processor nodes 10b and 10c arbitrate to determine which one will acquire the network layer address of processor node 10a. Beck further discloses that accordingly, the routing daemon 21 puts together a table of routes from the router to each processor node (col. 11, line 49 to col. 13, line 59).

11. Regarding claim 15,

Beck shows in fig. 7 a standby group of ATM network devices (*processor nodes 10a, 10b, 10*c) within an ATM network (col. 10, lines 64-67, *high-speed communications interface, e.g. ATM*), each ATM network device within the standby group having its own ATM address (*S1.A, S1.B, S1.C*) and sharing a non-ATM network address with other members of the standby group (col. 11, lines 17-22, 40-45, *cluster alias address*).

Beck further shows in fig. 7 a server (*network router 25*) which is configured to determine that the first network device (processor node 10b) is available by at least one of (i) detecting that the first network device has opened a virtual circuit within a predetermined period, and (ii) detecting that the first network device has sent a KEEP ALIVE message within a predetermined period (col. 12, lines 14 to col. 13, line 63, see in particular col. 12, line 67 to col. 13, line 3, *A routing daemon 21 that queries*

processing nodes 10a-10c generates a map indicating that each of those processor nodes can be used as paths to subnet S1).

Beck discloses that the server is configured to send a notification identifying the first network device by ATM address (*S1.B*) and the shared non-ATM network address (*cluster alias address associated with a virtual subnet S3*) and receive one or more packets destined for the shared non-ATM network address (col. 12, lines 14-34).

12. Regarding claim 18,

Beck discloses that the cluster management application sends a message to the other processor nodes within the cluster when one of those processor nodes crashes. Beck further discloses that nodes 10b and 10c arbitrate among themselves to determine whine one will acquire the network layer address of processor node 10a (col. 13, lines 38-45).

13. Regarding claim 19,

Beck discloses cluster alias address associated with virtual subnet S3. Beck discloses that the route to the virtual subnet address are advertised using common IP routing protocol (col. 12, lines 14-22).

14. Regarding claims 21, 34, 35, 36, 37, 38,

Beck discloses that one or **more** cluster alias addresses may be "configured" in a virtual or physical subnet (col. 11, lines 40-45).

15. Regarding claim 23,

Beck shows in fig. 7 a network device (*processor node 10a*) in the ATM network (col. 10, lines 64-67, *high-speed communications interface, e.g. ATM*), the network device having at least one non-ATM network address (col. 11, lines 17-22, 40-45, *cluster alias address*).

Beck further shows in fig. 7 a server (*network router 25*) which is configured to assign the network device to a group of network devices having a shared non-ATM network address (col. 11, lines 17-22, 40-45, *cluster alias address)* and to determine whether the network device is not available by at least one of (i) determining whether the network device has not opened a virtual circuit within a predetermined period, and (ii) determining whether the network device has not sent a KEEP ALIVE message within a predetermined period (col. 12, lines 14 to col. 13, line 63, see in particular col. 13, lines 9-11, *For illustration purposes, consider that processor node 10a is the preferred path to subnet S1. When processor node 10a crashes, the network router will stop getting responses to its queries. After a predetermined period of time has expired, the routing daemon 21 will timeout while waiting for a response from processor node 10a*).

Beck discloses that if the network device is not available, change the network device from an active status in which the network device services the non-ATM network address to a standby status in which the network device does not service the non-ATM network address (col. 13, lines 55-59, After the routing failover period has expired, the routers will not send data packets to processor node 10a),

wherein the server is an ATM server in the ATM network, (col. 10, lines 64-67, *high-speed communications interface, e.g. ATM;* col. 12, lines 51-60, *Network 22* ***includes*** *network router devices,* e.g., **network router 25***),* and wherein the server is not one of the network devices in the group of network devices (see fig. 7, note that network router 25 is not one of the network devices in cluster 24).

16. Regarding claim 26,

Beck discloses high-speed communications interface, e.g. ATM (col. 10, lines 64-67).

17. Regarding claim 28,

Beck discloses cluster alias address (col. 11, lines 17-22, 40-45).

18. Regarding claims 29 and 32,

Beck discloses use of a bitmask, referred to as “subnet mask,” that is “ANDed” with the identified destination address, e.g. the cluster alias address (col. 11, lines 14-19).

19. Regarding claim 30,

Beck discloses a map database (col. 12, lines 51-65).

20. Regarding claim 31,

Beck discloses a table of routes (col. lines 51-65).

21. Regarding claim 40,

Beck shows in fig. 7, a network router 25.

22. Regarding claim 41,

Beck shows in fig. 7, a Subnet S2 with ATM addresses S2.B and S2.C.

23. Regarding claim 43,

Beck shows in fig. 7, that each of the processing nodes 10a, 10b, and 10c, can be used as paths to Subnet S1, which is a physical connection (claimed bridge; col. 13, lines 2-3).

Claim Rejections - 35 USC § 103

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

25. Claims 5, 17, 25, 39, 44, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beck in view of RFC 2225 Classical IP and ARP over ATM ("RFC 2225").

Regarding claims 5, 17, 25, 39, 44, and 45,

Beck does not disclose that the server is configured to send an ATMARP request to form the virtual connections .

RFC 2225 discloses in an SVC environment, ATMARP servers are used to resolve target IP addresses to target ATM address via an ATMARP request and reply protocol and that ATMARP servers must have authoritative responsibility for resolving ATMARP requests of all IP members using SVCs located within the LIS (Section 5.2).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the method for providing an integrated cluster alias address of Beck to use an ATMARP request as taught by RFC 2225. One skilled in the art would have been motivated to make the combination for the purpose of resolving target IP addresses to target ATM address (RFC 2225, Section 5.2).

Response to Arguments

26. Applicant's arguments filed 1/17/2008 have been fully considered but they are not persuasive.

- The Applicant argues on page 11 with respect to claims 1 and 42 of the Remarks that network router 25 of Beck is not an ATM server and that Beck merely describes that the RPCs are issued over a high-speed communication interface (e.g., ATM) which connects the processor nodes (e.g., 10a-10c) within the cluster.

- The Examiner respectfully disagrees. Beck discloses that network 22 of fig. 7 can be an ATM network by the virtue of an ATM interface (col. 10, lines 63-67). Beck further discloses that **network 22 includes network router 25** (col. 12, lines 51-60), thus network router 25 is in the ATM network; therefore, network router 25 is an ATM server. In addition, Beck further discloses that a client processor node 26 (fig. 2) is also shown **connected to subnet 22 via** a network 23 and a **network router 25** (col. 4, lines 26-28). Furthermore, fig. 9 clearly shows that the high-speed communication interface (e.g. ATM) 22 that the Applicant alludes to in the argument connects network router 25 to the processor nodes 10a-10c. Therefore, Beck clearly discloses that network router 25 is an ATM server as claimed in independent claims 1 and 42 as well as the other independent claims 15, 20, 23, 24, and 33.

- The Applicant further argues on page 11 with respect to claim 15 that Beck fails to disclose or suggest that a server that is not in the standby group sends a notification.
- The Examiner respectfully disagrees. Beck discloses that a map database is maintained by a routing daemon process or "daemon" 21 that executes on **each** network router 25. The daemon processes 21 **queries** the processor nodes and **network routers**

to which it is connected to find out which processor nodes and network routers they are connected to. Accordingly, the routing daemon 21 puts together a table of routes from the router to each processor node (col. 12, lines 51-65). Note that daemon processes 21 queries other network routers to learn the processor nodes and network nodes they are connected to in order to build the table of routes. Therefore, the network routers must **send a notification** as claimed to answer the querying daemon process/router that inquired about the connections.

- The Applicant still further argues on page 11 with respect to claim 20 that processor nodes arbitrate among themselves to determine which acquire the network layer address of a processor node that has crashed and thus argues that Beck fails to anticipate claim 20.
- The Examiner respectfully disagrees. Claim 20 recites in part "promote the network device from a standby status to an active status in which the network device services the non-ATM network address, wherein the server is configured to promote the network device in response to …detecting that another network device in the first group of network devices has not sent a KEEP ALIVE message within a predetermined period." To summarize, the claim requires that after a predetermined period in which a network

device has not sent a KEEP ALIVE message, another network device is promoted from a standby status to an active status. Now looking at Beck, he discloses at col. 13, lines 7-15, that **when processor node 10a crashes** (claimed has not sent a KEEP ALIVE message), the network router will stop getting responses to its queries. **After a predetermined period of time** (claimed predetermined period) has expired, the routing daemon 21 will timeout while waiting for a response from processor node 10a. Such a timeout is referred to as the "routing failover period". The **routing daemon 21** (which is in network router 25 of fig. 7) thereafter **replaces processor node 10a as the preferred route to subnet S1 with either processor 10b or 10c** (claimed promote the network device from a standby status to an active status). Note that claim 20 requires the server to wait a predetermined period before promoting a network device. Such is the case with Beck, wherein **after** a "routing failover period" (predetermined period), routing daemon 21 replaces processor node 10a with 10b or 10c as the preferred route as just discussed above. The arbitration process between node 10b and 10c occurs **within** the “routing failover period” (predetermined period), not after.

- The Applicant still further argues on page 12 with respect claims 23, 24, and the remaining independent claims that Beck fails to disclose the respective limitations of the aforementioned claims. Arguments used above in regards to claims 1, 15, and 20, are similarly used.
- The Examiner respectfully disagrees for similar reasons discussed above. To summarize, Beck does disclose that network router 25 is an ATM server and that the network router 25, via the daemon process 21, does promote a network device after a predetermined period after another device has crashed.

- The Applicant still further argues on page 13 with respect to dependent claim 5 that the Action cited col. 11, line 30 – col. 12, line 13. As such the Applicant argues that in col. 11, lines 53-58, Beck specifies that "all traffic…are initially delivered to one cluster node…" to argue that the ARP function in Beck is achieved by a cluster member, not the network router 25.
- The Examiner respectfully disagrees. The disclosure by Beck cited by the Applicant ("all traffic...are initially delivered to one cluster node...") is in reference to what Beck describes as "disadvantage that arises with a cluster alias address in a **physical subnet** configuration…" perhaps as it exists in prior art (see col. 11, lines

46-49). He then describes a subject matter, **virtual subnet** design, that concerns his invention beginning on col. 11, line 59. In other words, the disclosure concerning all traffic initially being delivered to one cluster node is in reference to a prior art disadvantage, not his invention - mainly due to a physical subnet configuration versus a virtual subnet design used by his invention. Furthermore, the rejection of claim 5 is a 103 rejection based on a combination of Beck and RFC 2225, wherein the Examiner proposes a combination to have the **server** be configured to send an ATMARP request of RFC 2225 to form the virtual connections.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Sol whose telephone number is (571) 272-5949. The examiner can normally be reached on M-F 7:30am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/A. S./
Examiner, Art Unit 2619
3/31/2008

/Wing F Chan/
Supervisory Patent Examiner, Art Unit 2619
3/26/08